

Reactions of Accessions of Citrullus colocynthis from Nigeria to Zucchini Yellow Mosaic Virus and other Cucurbit Viruses.

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Recently (3), we reported that two accessions of Egusi (Citrullus colocynthis) from Nigeria were tolerant to zucchini yellow mosaic virus (ZYMV). However, the reaction of Egusi to this virus appeared to be influenced by temperature and perhaps light intensity. When grown in the greenhouse during the winter months, plants responded to ZYMV infection with small systemic chlorotic spots, which slowly enlarged, coalesced, and turned necrotic, causing premature leaf death. Conversely, during the summer months, plants were completely resistant, being free of systemic infection. Similarly, in Egypt, Egusi was the only Citrullus species highly resistant to ZYMV.

Previously, an accession of C. colocynthis (Webb's 'Egun') had been found to be resistant to watermelon mosaic virus 1 (WMV-1) (1) and watermelon mosaic virus 2 (WMV-2) (4). Since C. colocynthis is genetically compatible with C. lanatus, the former species can be regarded as a very valuable source of viral resistance for the enhancement of watermelon.

An opportunity to test additional lines of C. colocynthis was provided by a new collection of this species, which was made available in 1985 by the Plant Introduction System. These lines were originally collected in Nigeria by T. Eadra of the National Horticultural Research Institute of Ibadan. Viral tests were conducted during the summer of 1985 in a greenhouse kept at 30 C, using cucumber mosaic virus (CMV), WMV-1, WMV-2, and ZYMV (3). Two commercial watermelon cultivars were included as controls. The results are summarized in the following table.

Table 1. Reaction of plant introduction of Citrullus colocynthis from Nigeria to four cucurbit viruses.

Accession No.	CMV	WMV-1	WMV-2	ZYMV-CT
PI494527	R	S	S	S
PI494528	R	S	T	R
PI494529	R	S	S	S
PI494530	R	S	S	S
PI494531	R	S	S	S
PI494532	R	S	T	R
Sugar Baby	R	S	S	S
Crimson Sweet	R	S	S	S

S = Susceptible (moderate to severe leaf mosaic); T = Tolerant (mild foliar mottle, and vigorous growth); R = Resistant (local infection, but free of systemic symptoms).

These data revealed that: a) all lines were resistant to CMV, but susceptible to WMV-1; and b) two lines were tolerant to WMV-2 and resistant to ZYMV. Thus, it is evident that among accessions of C. colocynthis, there are basic differences regarding their reaction to WMV-2 and ZYMV. This differential reaction should be considered in breeding for resistance.

The finding also offers the opportunity to determine the inheritance of resistance to ZYMV and tolerance to WMV-2 in accessions of the same wild species. A similar situation was exploited to elucidate the inheritance of resistance to WMV-1 in Cucumis metuliferus (2). Crosses have been made between Egusi plants of resistant and susceptible lines for further studies.

Literature Cited

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